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TITLE: Non-sintered type thin electrode for  
battery, battery  
using same and process for same

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[0042] In the following, in reference to the drawings, a sealed cylindrical nickel-metal hydride battery is described as an example wherein an electrode obtained by winding a nickel positive plate 1, whose main material is nickel hydroxide powder and whose electrode thickness is 500  $\mu\text{m}$  or less, and an alloy negative plate 2, whose main material is hydrogen absorption alloy powders and of which electrode thickness is much thinner than that of the positive electrode, together with a separator 3 made of non-woven sheet of polyolefin-type synthetic resin fiber, is inserted into a cylindrical metal case and then an alkaline electrolyte solution is poured in the case, which is then sealed.

[0062] It is preferable that the final electrode is coated with fine powders of fluororesin. This is in order to prevent the edges of the concave and convex parts of the conductive electrode substrate from sticking out of the electrode like whiskers or from sticking out of the separator, which can cause short circuits, in addition to preventing the active material powder from shedding. Accordingly, as for the kinds of synthetic resins used for the coating of the electrode, in addition to the fluororesin, resins having electrolyte-proof and binding characteristics such as resins containing

polyolefine, polyvinyl-type and polysulfone powders or their copolymers as the main material can be applied.

[0080] This electrode is cut into a width of 40 mm and a length of 150 mm and, after that, is immersed in a suspension of microscopic powders of fluoro-resin of a concentration of approximately 3 wt % and, then, is dried to gain a nickel positive electrode. This is combined with a negative electrode of the conventional MmNi.sub.5 type hydrogen absorbing alloy wherein the thickness is 220 .mu.m, the width is 40 mm and the length is 210 mm so as to be inserted into an AA size battery case of, which is obtained as a production example. In addition, by sealing with the lid 6, which also works as a positive terminal and is known in the art, and a gasket 5 as in FIG. 3, a sealed cylindrical Ni/MH battery of AA size is manufactured, of which the theoretical capacity of the positive electrode is 1550 mAh. And, as for the separator an unwoven cloth of sulfonated poly-olefin resin fiber of the thickness of 120 .mu.m is adopted while a KOH solution of approximately 30 wt. % is used for the electrolyte.

8. A non-sintered type thin electrode for batteries according to claim 1, wherein the surfaces of the electrode are covered with an electrolyte-proof fine powder of synthetic resin.

16. Process for producing a non-sintered thin electrode for batteries according to claim 11, wherein after being cut into a desirable size, the said electrode is immersed in a liquid wherein a fine powder of synthetic resin is dispersed or the same liquid is sprayed onto the surfaces of said electrode so that said electrode is thinly coated with the fine powder of said synthetic

resin.

17. Process for producing a non-sintered thin electrode for batteries according to claim 16, wherein said synthetic resin is any of fluoride resin, polyolefin, polyvinyl-type and polysulfone resin powders or copolymers of which the main material is the above resins.